CLAIMS

1. A gyroscope comprising at least one mass (M) capable of vibrating along an x axis at a resonant excitation frequency F_x and capable of vibrating along a y axis perpendicular to the x axis, at a resonant detection frequency F_y, under the effect of the Coriolis force generated by a rotation about a z axis perpendicular to the x and y axes, characterized in that it comprises, connected to the mass (M), a signal generator for generating a signal that disturbs the vibration of the mass (M) along y, and a feedback control loop for controlling the resonant frequency F_y so that F_y is equal or practically equal to F_x throughout the duration of use of the gyroscope, the feedback control loop comprising:

- means (11) for modifying the resonant detection frequency F_y;
- means (3) for detecting the variation induced by the disturbing signal on the vibration of the mass (M) along y, an error signal e representative of the difference between F_x and F_y being deduced from this variation; and
- control means (16) for controlling the F_y-modifying means (11), the control being established on the basis of the error signal e.

2. The gyroscope as claimed in the preceding claim, characterized in that the disturbing-signal generator is connected to the mass (M) via the F_y-modifying means (11).

3. The gyroscope as claimed in the preceding claim, characterized in that the disturbing-signal generator is connected to the F_y-modifying means (11) via the feedback control loop.

4. The gyroscope as claimed in claim 2 or 3, characterized in that the disturbing-signal generator is an oscillator (12') of predetermined reference frequency F_0.

5. The gyroscope as claimed in any one of claims 2 to 4, characterized in that, since the gyroscope has a predetermined bandwidth, the disturbing signal is a periodic signal of frequency F_0, where F_0 is above the bandwidth of the gyroscope but below F_x.

6. The gyroscope as claimed in claim 1, which includes excitation means (4) for exciting the mass (M) along y, with the aim of counterbalancing the vibration along y generated by the Coriolis force, characterized in that the disturbing-signal generator is connected to the mass (M) via these excitation means (4).

7. The gyroscope as claimed in the preceding claim, characterized in that it includes a y excitation loop and in that the disturbing-signal generator is connected to the excitation means (4) via the y excitation loop.

8. The gyroscope as claimed in claim 6 or 7, characterized in that the disturbing-signal generator is a voltage-controlled oscillator (12).

9. The gyroscope as claimed in any one of claims 6 to 8, characterized in that, since the gyroscope has a predetermined bandwidth, the disturbing signal is a periodic signal, the frequency of which varies between $F_x - \Delta F$ and $F_x + \Delta F$ according to a frequency F_0, where F_0 is above the bandwidth of the gyroscope but below F_x, ΔF being equal to about 10% of F_x.

10. The gyroscope as claimed in any one of claims 6 to 9, characterized in that the excitation means (4) comprise electrodes.

11. The gyroscope as claimed in any one of the preceding claims, characterized in that the feedback control loop furthermore comprises, connected in series, means (7) for shaping the signal output by the detection means (3), an amplitude detection device (13), an F_0-centered band-pass filter (14), a synchronous demodulator (15) for synchronizing with the reference frequency F_0, and an integrator/corrector (16) that is connected to the means (11) for modifying the frequency F_y.

12. The gyroscope as claimed in any one of the preceding claims, characterized in that, since the mass (M) is connected to a rigid frame (C) by means of springs along x and y, of respective stiffness K_x and K_y, the means (11) for modifying the resonant frequency F_y comprise electrodes for controlling the stiffness K_y.

13. The gyroscope as claimed in any one of the preceding claims, characterized in that the means (3) for detecting the variation induced in the vibration of the mass along y comprise electrodes.

14. The gyroscope as claimed in any one of the preceding claims, characterized in that, when the disturbing signal is a periodic signal of predetermined frequency F_0, this disturbing signal is a sinusoidal or triangular signal.

15. The gyroscope as claimed in any one of the preceding claims, characterized in that it is a micromachined gyroscope having a plane structure and in that the x and y axes lie in the plane of the plane structure.

16. The gyroscope as claimed in any one of claims 1 to 14, characterized in that it is a micromachined gyroscope having a plane structure and in that the x

axis lies in the plane of the plane structure and the y axis does not lie in the plane of the plane structure.

17. The gyroscope as claimed in any one of claims 1 to 14, characterized in that it has a three-dimensional structure.